Abstract

Tone signal detection circuit for detecting tone signals

Tone signal detection circuit for a receiving circuit for detecting at least one tone signal of predetermined tone signal frequency ($f_E$) which is contained in a received analog input signal, comprising a reference signal generator (41) for generating an analog converter reference signal which consists of a reference DC ($V_{refDC}$) and a periodic reference AC ($V_{refAC}$) having a variable fundamental frequency ($f_G$), which is superimposed on the reference DC, an analog/digital converter (11) for converting the analog input signal into a digital data stream in dependence on the analog converter reference signal ($V_{ref}$); and comprising a digital control circuit (20) which adjusts the variable fundamental frequency ($f_G$) of the reference signal ($V_{ref}$) generated by the reference signal generator (42) in accordance with the predetermined tone signal frequencies ($f_G$) of the tone signals to be detected and evaluates the digital data stream output by the digital analog/digital converter (11) for detecting a data pattern corresponding to the tone signal.

Fig. 2

List of reference designations

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|---|---|
| 1 | Receiver |
| 2 | Signal input |
| 3 | Line |
| 4 | Input |
| 5 | Gain control circuit |
| 6 | Output |
| 7 | Line |
| 8 | Anti-aliasing filter |
| 9 | Line |
| 10 | Analog signal input |
| 11 | Analog/digital converter |
| 12 | Reference signal input |
| 13 | Digital output |
| 14 | Digital lines |
| 15 | Interface circuit |
| 16 | Lines |
| 17 | Data processing unit |
| 18 | Lines |
| 19 | Digital input |
| 20 | Digital control circuit |
| 21 | Lines |
| 22 | Band-pass filter |
| 23 | Lines |
| 24 | Comparator circuit |
| 25 | Adjusting lines |
| 26 | Adjusting connection |
| 27 | Lines |
| 28 | Zero transition counting device |
| 29 | Lines |
| 30 | Control logic |
| 31 | Lines |
| 32 | Memory |
| 33 | Lines |
| 34 | Interrupt output connection |
| 35 | Interrupt line |
| 36 | Central controller |
| 37 | Line |

38 Adjusting connection
39 Line
40 Adjusting input
41 Reference signal generator
42 Signal generator
43 Input
44 Line
45 Output
46 Line
47 Adder input
48 Adder
49 Adder input
50 Line
51 Reference voltage source
52 Adder output
53 Line
54 Reference signal generator output
55 Line